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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/035,801	12/28/2001	Jae Doeg Lim	SAMS01-00166	1745

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EXAMINER	
ABRAHAM, ESAW T	
ART UNIT	**PAPER NUMBER**
2133	

DATE MAILED: 03/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/035,801	LIM ET AL.	
	Examiner	Art Unit	
	Esaw T Abraham	2133	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 November 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 December 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Final office action

Response to the applicant's amendments

1. Applicants argument with respect to original claims 1-25 filled on 11/02/04 have been fully considered but they are not persuasive. Therefore, the response in the firs office action made on 07/02/04 stands active.

Claim objections

2. In view of the amendment filed on 11/01/2004, the Examiner withdraws all objections to the claims.

Claim Rejections – 35 USC § 112(2nd)

3. In view of the Amendment filed 11/01/2004, the examiner withdraws the previous 35 USC § 112 rejections to claims 6 and 14 in the previous Office Action filed on 07/02/2004.

Response to the applicant's argument

The applicant argues that the prior art of record (Yi) argues that, in figure 3 of Yi's reference, the digital source information from the encoder (120) data is input in parallel to the interleaver (132) and the first turbo encoder (134) thus the output of the first turbo encoder (134) in the Yi reference is not applied as an input to the interleaver (132). However, the argument is not convincing since claim 16 of Yi clearly teaches a first turbo encoder encoding a digital source information, an interleaver interleaving the said digital source information and a second turbo encoder encoding the interleaved

digital source information. Further, The examiner would like to point out that figure 3 of Yi is only teaching the turbo encoder (for example, see figure 2 element 122) includes an interleaver (132) between two constituent recursive convolutional encoders (134, 136) (see col. 8, lines 21-28). Therefore, the application of the prior art of record (Yi) in relation to the claimed invention is appropriate.

The applicant argues that the prior art of record (Yi's) in view of Park do not enclosed a multiplexer having a first input coupled to an output of the first turbo encoder and a second input coupled to an output of second turbo encoder and multiplexes data from both turbo encoders and further the applicant argues that Yi's invention transmits uninterleaved and interleaved data elements to achieve an overall code rate and the combination of the Yi system by teaching reference multiplexing the uninterleaved and interleaved output. However, the argument is not convincing since Yi teaches first turbo encoded broadcast signal consists essentially of uninterleaved data and parity check elements and the second turbo encoded broadcast signal consists essentially of interleaved data and parity check elements (see col. 4, lines 45-48) which Yi is basically teaching the same system as the applicants invention (For example: the applicant's figure 6 teach first turbo encoder (610) coupled to MUX (640) having an uninterleaved data and second turbo encoder (630) coupled to the MUX (640) for multiplexing interleaved and uninteleaved data. In light of the above, the final rejection holds strong in view of the recited references.

All amendments and arguments by the applicant have been considered. It is the Examiner's decision that claims 1-25 are not patentably distinct or non-obvious over the prior art of record in view of the references. Therefore, the rejection is maintained.

1. Claims **1-25** remains pending

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims **1-5, 10-13 and 18-21,** are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Yi (U.S. PN: 5,907,582).

As per claims **1, 10 and 18,** Yi teach or disclose a digital communication system comprising first turbo encoder for turbo encoding digital source information, an interleaver for interleaving the digital source information, second turbo encoder for turbo encoding the interleaved digital source information into a second code sequence (see claim 16, section A 1-3).

As per claims **2, 11 and 19,** Yi teach all the subject matter claimed in claim 1 including first and second puncturers for selectively replacing data in the fist and second code sequences (see claim 16, section A 4 and 5).

As per claim **3,** Yi teach all the subject matter claimed in claims 1 and 2. Although, Yi is silent on how the apparatus is capable of providing a packet data error rate less than one percent when 64-QAM modulation is used, this practice is deemed to be inherent to the system of Yi as Yi's invention provide code diversity with packet combining to result in an overall improved performance through very high coding gain and since the Yi's system performance is improved through a very high coding, by virtue

of the fact the system of Yi reduce a packet data error rate and improve the information bit rate.

As per claims **4, 12 and 20,** Yi teach all the subject matter claimed in claim 1 including Yi in figure 3, teaches a turbo decoding comprising first and second convolutional encoders (see elements 134 and 136) and an interleaver (132) coupled to the second convolutional encoder for convolutionally encoding interleaved data.

As per claims **5, 13 and 21,** Yi teach all the subject matter claimed in claim 1 including Yi in figure 3, teaches a turbo decoding comprising first and second convolutional encoders (see elements 134 and 136) and an interleaver (132) coupled to the second convolutional encoder for convolutionally encoding interleaved data.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims **6-9, 14-17 and 22-25,** are rejected under 35 U.S.C. 103(a) as being unpatentable over Yi (U.S. PN: 5,907,582) in view of Park et al. (U.S. PN: 6,397,367).

As per claims **6, 14, and 22**,Yi teach or disclose a digital communication system comprising first turbo encoder for turbo encoding digital source information, an interleaver for interleaving the digital source information, second turbo encoder for turbo encoding the interleaved digital source information into a second code sequence (see claim 16, (1)-(3)). Yi further teaches a first and second multiplexers for multiplexing the source data information together with first punctured code sequence and second punctured code sequence (see claim 17). Yi **does not explicitly** teach that a multiplexer capable of multiplexing data from said first turbo encoder and from said second turbo encoder. **However,** Park et al. in figure 5 teach a first channel coder (first turbo encoder) (502) and a second channel coder (second turbo encoder) (512) output turbo encoded data and coupled to a multiplexer (503) whereby the multiplexed data is rate matched at a rate matcher (504) by symbol repetition, puncturing or puncturing-after-symbol repetition (see col. 2, lines 22-33). **Therefore,** it would have been obvious at the time the invention was made to one of ordinary skill in the art to include a multiplxer as taught by Park et al. for multiplexing data outputted from first and second turbo encoders. **This modification** would have been obvious because a person having ordinary skill in the art would have been motivated to do so because providing a multiplexer that are selecting data from the first and the second turbo encoders is a

known in the art of transmitting communication systems (see col. 2, lines 22-24) for multiplexing data coming from different channels.

As per claims **7, 15 and 23,** Yi in view of Park et al. teach all the subject matter claimed in claims 6, 14 and 22 including Park et al. in figure 5 teach a first channel coder (first turbo encoder) (502) and a second channel coder (second turbo encoder) (512) output turbo encoded data and coupled to a multiplexer (503) whereby the multiplexed data is rate matched at a rate matcher (504) by symbol repetition, puncturing or puncturing-after-symbol repetition (see col. 2, lines 22-33).

As per claims **8, 16 and 24,** Yi in view of Park et al. teach all the subject matter claimed in claims 6, 14 and 22 including in figure 3 Yi teaches a turbo decoding comprising first and second convolutional encoders (see elements 134 and 136) and an interleaver (132) coupled to the second convolutional encoder for convolutionally encoding interleaved data. Furthermore, Park et al. in figure 2 disclose a convolutional turbo coder includes a first constituent coder (201), a second constituent coder (202) and an interleaver (211) interconnected between the constituent coders (201 and 202), an RSC coder is typically used, which is well known in the art (see col. 1, last paragraph).

As per claims **9, 17 and 25,** Yi in view of Park et al. teach all the subject matter claimed in claims 6, 14 and 22 including in figure 3 Yi teaches a turbo decoding comprising first and second convolutional encoders (see elements 134 and 136) and an interleaver (132) coupled to the second convolutional encoder for convolutionally encoding interleaved data. Furthermore, Park et al. in figure 2 disclose a convolutional turbo coder includes a first constituent coder (201), a second constituent coder (202) and

an interleaver (211) interconnected between the constituent coders (201 and 202), an RSC coder is typically used, which is well known in the art (see col. 1, last paragraph).

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

5. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Esaw Abraham whose telephone number is (571) 272-3812. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are successful, the examiner's supervisor, Albert DeCady can be reached on (571) 272-3819. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Esaw Abraham

Esaw Abraham

Art unit: 2133

ALBERT DECADY
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